

Human Genetics Performance Task

Hemophilia Case Study Type 3

A husband and wife want to understand the probability that their children might inherit Hemophilia. For this case study, use X^H for not affected, & X^h for affected. The case study involve James and Anna, who have a child Greg. Greg is affected with hemophilia. James also is affected with hemophilia. Anna is not, but Anna's father is affected with hemophilia.

1. What are the possible genotypes for Jame's and Anna Parents?
2. What is the probability that James and Anna will have another child with hemophilia?
3. Anna has a sister who does not have hemophilia, but is concerned that she may pass on the gene for hemophilia to a future child. What is the probability that she will & won't pass on the gene?
4. Use this case study to explain why hemophilia is a sex-linked trait.

FCA's

1. Show work, including Punnett Squares, & pedigrees. (40%)
2. Answer questions completely. (40%)
3. Using the following keywords appropriately: heterozygous, homozygous, gene, allele, genotype, phenotype, Punnett Square, pedigree. (20%)